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IX.—*Supplement to a "Catalogue of the Zoophytes of South Devon and South Cornwall," with Descriptions of new Species.* By the Rev. THOMAS HINCKS, B.A.

[Plates V. & VI.]

IN 1861–62, I published, in the pages of the 'Annals,' a "Catalogue of the Zoophytes of South Devon and South Cornwall," including under the term "zoophyte" the Hydroida, the Lucernarian section of the Discophora, the Actinozoa, and the Polyzoa—in short, the groups embraced in Dr. Johnston's 'History.' As many as 241 species\* were recorded as occurring in the district, of which 18 were new to science and 3 found a place for the first time in the fauna of Great Britain. Others have been met with since, including two or three very interesting new forms of Hydroida, which I have lately procured by dredging, in Salcombe Bay; and in the present Supplement 24 species are added to the list, raising the whole number of south-western forms hitherto observed to 265.

A few species which had only been found in the north have their range of distribution extended southward. *Syncoryne eximia*, which I have noted, in my 'History of the British Hydroid Zoophytes,' as confined to the north-eastern coast, where it is the common representative of its family, has just occurred to me in great abundance in South Devon. *Calycella fastigiata* (Alder) and *Halecium sessile* (Norman) are added to the group of forms which is common to the western side of Scotland and the south-west of England. *Diastopora sarniensis* (Norman), found hitherto only in the Channel Islands, proves to be also a native of the Cornish coast.

The new species of Hydroida which I am about to describe are peculiarly interesting. One of them must be referred to a

\* I omit *Tubularia Dumortierii*, which was inserted in the Catalogue by mistake.

new genus of *Corynidæ*, exhibiting curious intermediary characters; the other is a Campanularian distinguished by its exquisitely graceful calceoliform capsule. I have also recently obtained the gonozoid of the genus *Lovénella* (Hincks), which had not been previously noticed. It presents some very distinctive peculiarities, and confirms the title of the form to generic rank, which hitherto rested on characters supplied by the trophosome alone.

For the sake of convenience, and to mark the connexion between the present paper and its predecessor, I have retained the term zoophyte in the title in the sense originally given to it in the Catalogue.

Subkingdom *CÆLENTERATA*.

Class *HYDROZOA*.

Order *HYDROIDA*. Suborder *Athecata*.

Family *Clavidæ*.

Genus *TUBICLAVA*, Allman.

*T. lucerna*, Allman.

On loose stones in a rock-pool, Torbay (*Allman*); on *Murex erinaceus* (living), dredged in Salcombe Bay (*T. H.*).

In the "Catalogue" I have remarked, under *Clava multicornis*, that there is much diversity in the extent to which the polypary is developed in that genus, and that in some cases it covers a third or more of the body of the polypite. I have little doubt that the specimens which exhibited the more fully developed polypary, and suggested this remark, should be referred to *Tubiclava*, and not to *Clava*.

Family *Podocorynidæ*.

Genus *PODOCORYNE*, Sars (in part).

*P. carnea*, Sars.

On *Nassa reticulata*, off the Oar Stone, Torbay; Salcombe Bay, on the same.

The *Nassa* is seldom dredged without this zoophyte as a "commensal."

Family *Corynidæ*.

Genus *CORYNE*, Gaertner.

*C. pusilla*, Gaertner.

Salcombe, in the higher rock-pools; common.

When the "Catalogue" was published, the species of *Coryne* and *Syncoryne* had not been accurately determined. The

form to which I have assigned Gaertner's classical name is distinguished by its sparingly branched, closely annulated stems, and its long linear polypites, with very numerous tentacles. It prefers the higher and smaller pools, while *C. vaginata* usually fringes the sides of the larger and deeper pools, nearer to low-water mark, amongst a luxuriant growth of Algæ.

Genus SYNCORYNE, Ehrenberg (in part).

*S. eximia*, Allman.

Salcombe Bay, dredged on stones, sponge, &c. ; abundant.

The Devonshire specimens were inferior in size to those which I have obtained from the Durham and Yorkshire coasts, but richly coloured and (in May) profusely laden with gonophores.

*S. pulchella*, Allman.

Salcombe, North Sands, in rock-pools. The polypites were of a watery-white colour, with occasionally a slight tinge of orange. Gonophores were obtained towards the close of May.

Genus GYMNOCORYNE, nov. gen.

GEN. CHAR. *Polypites* clavate, sessile, rising immediately from a filiform stolon, invested by a delicate chitinous polypary; tentacula capitate, very numerous, the uppermost furnished with large capitula and forming a circle round the oral extremity, the rest scattered over nearly the whole of the body. Reproduction unknown.

This interesting form differs from *Coryne*, as *Clava* from *Tubiclava*, in the absence of a distinct stem clothed with a polypary; the polypites are truly sessile. I have not been able to satisfy myself that there is even a slight sheath of chitine, as in *Clava*, round the base of the body. If such a structure exists, it must be of the most filmy and rudimentary character.

Another point in which this genus differs from *Coryne* is the disposition of the uppermost tentacles in a perfect circle (usually consisting of 8) round the oral extremity of the body (Pl. V. fig. 1, *a*). They have thicker stems and much larger capitula than the rest of the tentacles, and constitute a single verticil closely resembling that of *Clavatella* when in a state of contraction. Nothing of this kind occurs in *Coryne*: the oral tentacles, indeed, are frequently larger than the rest; but they are never disposed, as in *Gymnocoryne*, in a regular wreath so as completely to encircle the body a little below the mouth.

The remaining tentacles in the present form, which are extremely numerous, are slender, and have small capitula; they are scattered over the body, and extend to within a very short distance of the base of it.

In its polypite this genus has points of resemblance both to *Coryne* and *Clavatella*, combining some of the characters of each. By the total absence of a stem clothed with a polypary, it is separated from all the rest of the *Corynidae*. In this respect *Clavatella* comes nearest to it.

Unfortunately I have not had the opportunity of examining the gonozoid. No trace of reproductive bodies appeared among a large colony which I succeeded in keeping alive and in perfect health for about three weeks.

*G. coronata*, n. sp. Pl. V. figs. 1, 1 a.

Polypites very minute, slender, enlarging slightly upwards; proboscis opaque white, the central part of the body reddish; tentacles about forty (or more), a wreath of eight, with rather stout stems and large capitula, encircling the oral extremity, the rest irregularly distributed, slender, and with smaller capitula, extending over more than three-fourths of the body. Gonozoid unknown.

This is an exquisite species. The polypites are extremely minute, not more, I should think, than one-sixth of an inch in height; some *Clavatella*, which were kept in the same vessel with the *Gymnocoryne*, appeared like giants beside it. The verticil of oral tentacles encircles the conspicuous opaque-white proboscis like a crown; it is usually composed of eight; but nine are met with occasionally. The other tentacles are scattered over the body, but with the tendency towards a verticillate arrangement which prevails more or less amongst the *Corynidae*; they are very slender, and surmounted by small capitula, and decrease very markedly in size towards the base of the polypite. The endoderm is laden with reddish granules, which show through the transparent ectoderm; the colour is most vivid on the upper part of the body, and becomes fainter below. The polypites are extensile, and become very slender when fully elongated.

*Hab.* Salcombe Bay, in a deserted bivalve shell.

Family *Clavatellidæ*.

Genus *CLAVATELLA*, Hincks.

*C. prolifera*, Hincks.

*Additional habitat.* North Sands, Salcombe Bay, in the

small basins on the higher blocks of rock. In May the gonozoid was obtained, laden with gemmæ in various stages of development. One specimen occurred with seven arms (six being the more usual number), and bore seven buds—two very fully developed, two more with the lobes formed, and three in a very rudimentary state. On one of the young, buds were already forming. The zooid seemed less active in its habits than later in the season, when not burthened by so heavy a load.

Family **Eudendriidæ.**

Genus **EUDENDRIUM**, Ehrenberg.

*E. ramosum*, Linn.

*Note.*—The polypites of this species are furnished with a number of bosses, composed of thread-cells piled together, which are ranged in a circle round the body, about halfway between the base and the tentacles.

*E. capillare*, Alder.

*Additional habitat:* Salcombe Bay, not uncommon; gonophores abundant in May.

Family **Atractylidæ.**

Genus **PERIGONIMUS**, Sars.

*P. repens*, T. S. Wright.

Salcombe Bay, on *Turritella* &c., and in rock-pools.

*P. serpens*, Allman.

“On the stems of *Plumularia setacea*, from about 12 fathoms, Torbay” (*Allman*).

*P. coccineus*, T. S. Wright.

I refer to this species a *Perigonimus*, obtained at Salcombe, which seems to agree on the whole with Wright's description. It is larger than *P. serpens*, and the polypary not so delicate and yielding; the body does not rise, when extended, high above the top of the stem and assume a slender cylindrical form, as in the last-named species. The colour is red, very vivid just below the arms, but becoming much paler below. The tentacles are twelve in number and colourless; Wright gives only eight in *P. coccineus*. The stem tapers slightly downwards. For safe identification we require much fuller and more precise descriptions of many of the minute Hydroids than we have yet obtained.

Genus BOUGAINVILLIA, Lesson.

*B. muscus*, Allman.

“ In a rock-pool, Torquay, where it occurred abundantly, creeping over the bottom in small moss-like tufts ” (*Allman*).

Family Tubulariidæ.

Genus TUBULARIA, Linnæus (in part).

*T. humilis*, Allman.

Salcombe Bay, between tide-marks and dredged in shallow water.

The *T. Dumortierii* of the “ Catalogue,” I suspect, should be referred to this species.

Suborder Thecaphora.

Family Campanulariidæ.

Genus CAMPANULARIA, Lamarck.

Section c. With branching stems.

*C. calceolifera*, n. sp. Pl. VI.

Stem filiform, subflexuous, simply pinnate or very slightly branched, ringed above the origin of the pedicels. Hydrothecæ alternate, rather small and delicate, campanulate, with a plain and everted rim, borne on ringed pedicels of varying length. Gonothecæ (female) axillary, smooth, calceoliform, spirally curved at the upper extremity and tapering off below; orifice a tubular passage projecting into the interior, and opening out immediately below the spiral; borne on ringed stalks. Height of the shoot about  $1\frac{1}{2}$  inch.

The trophosome of this species is not marked by any very distinctive features. The shoots are generally unbranched, and very slightly flexuous; occasionally one or two short branches occur, but the habit is eminently simple. The calyces are of the usual campanulate shape, delicate, and graceful in their proportions, and with a decidedly everted margin, which gives them a very elegant appearance. The capsules are produced in great numbers, and are ranged along both sides of the stem, but seem to be confined to the lower half of the shoot. They are perfectly hyaline, and of a unique and singularly graceful form (Pl. VI. figs. 3, 4). They are best described as slipper-shaped; but the upper extremity is curved into a most exquisite spiral, while the lower portion tapers rapidly away towards the point of junction with the ringed

stem. Immediately below the spiral a wide opening (Pl. VI. fig. 3, *y*) leads into the tubular passage by which the embryos make their escape, which bends upwards within the capsule and terminates in a circular orifice near the top (Pl. VI. fig. 3, *x*). The gonophores, which are numerous, form an elongated mass nearly filling the cavity of the gonotheca; the ova seem to be discharged successively from the uppermost, and to pass into the planule stage while lying free in the capsule. The embryos, when mature, make their way by means of their cilia towards the upper extremity, enter the tubular passage at *x*, and make their escape into the water at *y* (Pl. VI. fig. 5).

If the external tubular orifice of an ordinary Campanularian capsule were reversed, and drawn within the cavity, so as to project into it instead of projecting from the summit into the water, and were then bent round and upwards on one side, we should have the very form which is characteristic of this species. A slight modification of structure has resulted in the production of a most exquisite shape.

*Hab.* Salcombe Bay, on stones &c.; not uncommon.

Genus LOVÉNELLA, Hincks.

*L. clausa*, Lovén.

On small stones, dredged off the Oar Stone, at the entrance to Torbay, in about 10 fathoms; Salcombe Bay, abundant, especially on shells of *Turritella communis*.

When the genus *Lovénella* was first characterized, I was only acquainted with the trophosome; but in May I procured specimens at Salcombe with gonothecæ, and was able to study the gonozoid, and so complete the diagnosis. The reproductive zooid is medusiform, and bears a general resemblance to that of *Clytia Johnstoni*; but there are important differences in the number and position of the marginal bodies and in the tentacles. The following should be added to the generic character as given in my 'History of British Hydroid Zoophytes,' vol. i. p. 177:—

*Gonothecæ borne on the stems and producing free medusiform zooids.*

*Gonozoid.*—Umbrella (at the time of liberation) globose; manubrium short, with a simple orifice; radiating canals 4; marginal tentacles of two kinds—4 in connexion with the radiating canals, of which two only are fully developed at the time of birth, springing from non-ocellated bulbous bases, 4 intermediate, of smaller size, without bulbs, slightly clavate, with thread-cells only towards the extremity (?); lithocysts 4, one of

which is placed halfway between each pair of the larger tentacles and close to one of the smaller.

[Pl. V. figs. 2, 2 a, 2 b.]

The gonotheca of *L. clausa* is borne on a rather long ringed pedicel, which rises from the stem a short distance below the calycle. It is elongate in form, tapering off from the truncate top to the base, the sides presenting a slightly sinuated outline. It contains many gonophores, from each of which a medusiform zooid is liberated. The latter may probably undergo important changes as it advances to maturity. At the time of birth two only of the principal tentacles are fully developed, the remaining pair are represented by the bulbous bases. The small intermediate tentacles are destitute of any enlargement at the point of origin; they spring directly from the circular vessel, close to the lithocyst, which stands out from the inner margin. They are extensile, and when at rest are spirally contracted; they are slightly clavate in outline, and, as far as I could determine during a brief examination, the extremity is rather thickly covered with thread-cells. The lithocysts include a single spherule; numerous thread-cells dot the surface of the umbrella.

The polypite of *L. clausa* is remarkable for its great length; when expanded, it rises high above the top of the calycle (Pl. V. fig. 2), and is a most beautiful object. The latter, tall as it is, is often insufficient for the accommodation of its tenant, and the body has to be bent, as represented in one of the figures, or even *looped*, to find space enough within.

Genus GONOTHYRÆA, Allman.

*G. gracilis*, Sars.

Salcombe Bay, dredged on shell.

This beautiful species was discovered by Sars at Bergen; it has also occurred on the coast of Connemara.

Family Lakoëidæ.

Genus CALYCELLA, Hincks.

*C. fastigiata*, Alder.

Cornwall, on *Aglaophenia tubulifera* and *Diphasia pinnata*, from deep water. Also found in Shetland and the Hebrides.

Family Haleciidæ.

Genus HALECIUM, Oken.

*H. sessile*, Norman.

Salcombe Bay, on *Antennularia* and *Salicornaria*.



**MOLLUSCOIDA.**

Class **POLYZOA.**

Order **INFUNDIBULATA** (Gymnolæmata, *Allman*).

Suborder **Cyclostomata.**

Family **Tubuliporidae.**

Genus **ALECTO**, Lamouroux.

*A. retiformis*, n. sp.

Polyzoary lobate, the lobes diverging from a common centre, much and irregularly branched, the branches anastomosing so as to form a rude network, the extremities generally bifid; surface minutely punctate, and often grooved transversely; zoëcia scattered irregularly, the free extremities of the tube projecting to a considerable distance, erect, orifice plain. The polyzoary frequently rises into short cylindrical processes with a cellular apex.

Specimens of this fine species measure about an inch across, and form somewhat circular patches. Four or five much-branched lobes radiate from a central point, the ramifications anastomosing freely so as to form irregular reticulations. The extremities of the lobes and of the branches are bifid. The surface is often much thickened and grooved transversely; but in the newer portions towards the end of the branches the lines which mark the walls of the zoëcia are distinctly visible. In one of my specimens the erect processes with cellular extremities are numerous and characteristic. The colour of the polyzoary is white.

The *A. diastoporides*, Norman, is perhaps the most nearly allied species.

*Hab.* Salcombe Bay, on a valve of *Pecten maximus*; Cornwall, on *Pinna* from deep water.

Family **Diastoporidae.**

Genus **DIASTOPORA**, Lamouroux.

*D. sarniensis*, Norman.

Cornwall, on stone from deep water.

Suborder **Paludicellea.**

Genus **PALUDICELLA**, Gervais.

*P. Ehrenbergi*, Van Beneden.

On the underside of the leaves of water-lilies in the river Clist, near Bishop's Clist, South Devon (*Parfitt*). This and

the following species of freshwater Polyzoa have been recorded by Mr. Parfitt in his 'Catalogue of the Zoophytes of Devon;' which forms part of a fauna of the county, upon which he has been long engaged\*.

Order **PHYLACTOLÆMATA.**

Suborder **Lophopea.** Family **Plumatellidæ.**

Genus **LOPHOPUS,** Dumortier.

*L. crystallinus,* Pallas.

In a pond near Exeter, attached to the roots of *Glyceria fluitans* (Parfitt).

Genus **PLUMATELLA,** Lamarck.

*P. repens,* Linn.

*Note.*—Mr. Parfitt records the occurrence of Allman's var. *a* on the leaves of water-lilies in the Clist river, near Bishop's Clist.

*P. limnas,* Parfitt.

On an old shell of *Anodon cygneus* in the canal, Exeter (Parfitt).

*P. lineata,* Parfitt.

On the leaves of water-lilies in a pond in Veitch's old nursery, Exeter (Parfitt).

*P. emarginata,* Allman.

I learn from Mr. Parfitt that, since the publication of his Catalogue, he has discovered this interesting form in the river Clist, at Bishop's Clist. This is, I believe, the first record of its occurrence in England, though Prof. Allman obtained it in various parts of Ireland.

Genus **FREDERICELLA,** Gervais.

*F. sultana,* Blumenbach.

Near Penzance (*Couch*). Mr. Parfitt informs me that it occurs plentifully in one or two places in Cornwall.

The affluence of the South-western fauna is abundantly proved by the foregoing Catalogue and Supplement. As I have remarked before, it is brought out strikingly by comparing the present list with the largest previously published, Mr. Alder's excellent 'Catalogue of the Zoophytes of North-

\* In this work an additional habitat is given for the rare *Aglaophenia pennatula*, which may be inserted here:—"Several tufts of five or six plumes each, of the typical form, were dredged in Salcombe Bay by F. Walker, Esq. . . . The plumes measure from 4 to 5 inches in height."

umberland and Durham,' in which 164 species are recorded for the north-eastern district against 265 for the south-western.

The species contained in this Catalogue and Supplement are thus distributed amongst the various groups:—

Hydrozoa	{	Hydroida .....	92	
		Discophora (Lucernariidæ) ..	2	— 94
Actinozoa	{	Zoantharia	37	
		Aleyonaria	4	— 41
Polyzoa	{	Cheilostomata .....	87	
		Cyclostomata .....	16	
		Ctenostomata .....	17	
		Paludicellea .....	1	
		Pedicellinea .....	3	
		Lophopea .....	6	— 130
				265

#### EXPLANATION OF THE PLATES.

##### PLATE V.

- Fig. 1.* *Gymnocoryne coronata*, Hincks, highly magnified: 1 *a*, the circle of oral tentacles.  
*Fig. 2.* *Lovénella clausa*, Lovén, with gonotheca, magnified: 2 *a*, the gonozoid; 2 *b*, the same, seen from below.

##### PLATE VI.

- Fig. 1.* *Campanularia calceolifera*, Hincks, nat. size.  
*Fig. 2.* A portion of a shoot, magnified.  
*Fig. 3.* A gonotheca, magnified, to show the internal structure: *x*, the internal tubular orifice; *y*, the point of exit.  
*Fig. 4.* Another gonotheca.  
*Fig. 5.* The upper portion of a gonotheca, more highly magnified, showing a planule escaping through the tubular orifice.  
*Fig. 6.* A gonophore, highly magnified.

X.—Notes on *Trionyx Phayrei* of Mr. Theobald and Dr. Anderson. By Dr. J. E. GRAY, F.R.S. &c.

THERE seems an unfortunate fatality attending the tortoises named after Lieut.-Col. Sir A. P. Phayre, late Chief Commissioner of British Birma. Mr. Blyth named a *Testudo* after him which has caused much controversy. Mr. W. Theobald, in a paper published in the 'Journal of the Linnean Society'